REMARKS/ARGUMENTS

The Examiner is thanked for the review of the application.

Claims 1, 3-7, 9-14, 16-27 remain in this application. Claims 1, 3, 7, 14, 16, 20-24, 26 and 27 have been amended. Claim 8 has been cancelled without prejudice or disclaimer of the subject matter therein. Claim 28 has been added. No new matter has been added.

In the Office Action dated November 16, 2006, the Examiner has rejected Claims 26 and 27 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Regarding this rejection the Examiner has stated that "the terms 'obvious' and 'unusual' are not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention."

Dependent Claims 26 and 27 have been amended to recite, in relevant part:

"removing the records that include at least one of negative prices, negative sale volume, negative costs, and erroneous prices, wherein the erroneous prices includes a product price that is a specified configurable standard deviations from mean price of the product of the plurality of products"

Support for the amendments may be found at page 19, lines 10-20 of the specification as filed, which states "The data is then subjected to a second error detection and correction process (Step 1019). This step cleans out certain obviously defective records. Examples include, but are not limited to, records displaying negative prices, negative sales volume, or negative cost. Records exhibiting unusual price information are also removed ... standard deviations from the mean price will be treated as erroneous and such records will be deleted."

Both Claims 26 and 27 have been amended to eliminate any indefiniteness, and now are in compliance with 35 U.S.C. 112, second paragraph.

The Examiner has also rejected Claims 1, 3-13 and 26 under 35 U.S.C. 103(a) as being unpatentable over Ouimet et al., US Patent No. 6,094,641. Regarding this rejection the Examiner

has stated that "Ouimet et al. teach an apparatus comprising a computer readable media that can be used for calculating a preferred set of prices for a plurality products or a subset of said plurality (figure 2)." Applicants respectfully traverse the rejection.

Base Claim 1 has been amended to recite in relevant part:

"computer readable code for designating a subset of products of the plurality of products, wherein the number of products in the subset of products is less than the number of products in the plurality of products, the subset being designated by solving an integer problem, and wherein the computer readable code for designating the subset of products includes computer readable code for allowing a number N to be designated and computer readable code for selecting no more than N products of the plurality of products to form the subset of products, and wherein the selected no more than N products has the largest impact on optimization of prices of any subset of no more than N products of the plurality of products" (Emphasis added).

Support for the amendment to Base Claim 1 may be found on page 134, lines 10-19 of the application as filed, which states: "**The subset optimization may choose the products that comprise this subset in a way that has the largest impact on the client's objective function**. If, for example, the client's objective is to maximize profit, it is desirable to **populate the subset of products** whose prices are allowed to change **with those products that are most likely to have the largest impact on profit**. In one way of doing this … to obtain a new set of optimized prices." (Emphasis added). Hence Base claim 1 is allowable over the cited art for at least the same reasons.

As Applicants have previously contended, Ouimet '641 appears to **incorporate** "**psychological factors**" **into a demand model** for pricing (column 1, lines 54-56) (emphasis added). Ouimet '641 appears to be primarily concerned with a "**tuning process** [for modifying] the original demand model . . . **to incorporate the psychological effects**", see column 5 lines 12-18, rather than **selecting a subset of products and optimizing prices of said subset**, as in the Applicants' invention. (emphasis added).

Ouimet revolves around incorporating perceptions into the demand model. It appears that in Ouimet all products are decomposed and analyzed to **compose perceived prices**. In contrast, the

present invention designates subsets of products for optimization. **Ouimet does not teach or suggest generating subsets**. In fact, it appears that what is disclosed in Ouimet **necessarily applies to all products** because a tuning of the demand model, as is disclosed in Ouimet, results in an evenhanded application to all products in order to produce meaningful results. Thus, Ouimet appears to tune a demand model which is very different from the present invention's subset designation for optimization.

As such, the method disclosed in Ouimet '641 appears to not function as a method of "computing a preferred set of prices for a subset of a plurality of products . . . [where] no more than N products of the plurality of products [form] the subset and wherein the selected . . . products has the largest impact on optimization of prices of any subset . . . of products" as recited in Claim 1. Hence Claim 1 is allowable over the cited art for at least the same reasons.

Regarding Claim 7, Examiner has stated that "it is inherent to the solution of an IP problem to 'relax' the integer constraint in order to convert the IP problem to a more solvable LP or linear programming problem." Applicants respectfully traverse the rejection.

Claim 7 has been amended to recite "computer readable code for providing rule relaxation, wherein the computer readable code for providing rule relaxation comprises: computer readable code for allowing the prioritization of a plurality of rules; and computer readable code for relaxing at least one lower priority rule to allow a higher priority rule to become feasible."

Support for the amendment may be found at page 128, line 5 to page 129, line 3 of the specification as filed, which states "The rules are prioritized . . . check is made to see if a rule is infeasible . . . rule may be relaxed to allow . . . process is continued until all rules are feasible." Applicants believe dependent Claim 7 is allowable over the cited art for at least the same reasons.

Moreover, Ouimet does not appear to disclose the utilization of integer programming, and additionally, even if Ouimet were construed as intending to utilize integer programming, the 'relaxation of rules' as disclosed in Claim 7 is different than the relaxation that occurs in integer programming. The present invention involves a **prioritization** of rules with subsequent relaxation

of **lower priority rules to allow higher priority rules to become feasible**. As such, Applicants respectfully contend that the rule relaxation as claimed is distinct from relaxation of integer programming. Hence Claim 7 is allowable over the cited art for at least the same reasons.

Moreover, Applicants respectfully submit that Ouimet '641 does not teach or suggest "further comprising computer readable code for providing rule relaxation, wherein computer readable code for providing rule relaxation comprises: computer readable code for allowing the prioritization of a plurality of rules; and computer readable code for relaxing at least one lower priority rule to allow a higher priority rule to become feasible." in the manner of Claim 7. Ouimet '641 does not appear to provide "rules", or the ability to relax such rules. Thus, the rule relaxation of Dependent Claim 7 is novel over what is disclosed in Ouimet '641. Hence Claim 7 is allowable over the cited art for at least the same reasons.

The Examiner has also rejected Claims 14-27 under 35 U.S.C. 103(a) as being unpatentable over Ouimet et al., US Patent No. 6,094,641 in view of Hartman et al., US Patent No. 5,987,425 and Delurgio et al., US Patent No. 6,553,352.

Regarding this rejection the Examiner has stated that "Ouimet et al. teach a computer implemented method for computing a preferred set of prices comprising the storing of initial prices of a plurality of products (column 3, lines 1-13), creating a demand model for generating said prices (figures 3-4B; column 3, lines 1-13), displaying optimized prices and setting store prices according to the displayed optimized price (column 1, lines 65-67; column 2, lines 12-17). Ouimet et al. also teach that an advantage of their system is that any demand model can be used (column 1, lines 59-62) hence, it would have been to one of ordinary skill to use a model derived from Bayesian statistics. Ouimet et al. do not explicitly recite dividing products into subsets. Hartman et al. teach deriving optimal prices for a plurality of products by dividing subsets according to department and price sensitivity (abstract; figure 5, column/line 2/57-3/49; column/line 4/35-5/25). Regarding, the selection of a subset of products, Hartman et al. teach product subsets being determined by 'experienced retailers' who have a 'good feel for the price sensitivity of items' in a product line ('425, column 5, lines 48-64). It has been held that in order for a new combination of old elements

to be patentable, the elements must cooperate in such manner as to produce a new, unobvious, and unexpected result…It has also been held that it is not 'invention' to broadly provide a mechanical or automatic means to replace manual activity which has accomplished the same result…Therefore, it would have been obvious to one of ordinary skill to automate the subset selection process of Hartman et al. using a well known computer algorithm such as integer programming (IP) (Note it is inherent to the solution of an IP problem to 'relax' the integer constraint in order to convert the IP problem to a more solvable LP or linear programming problem). However, neither Ouimet et al. nor Hartman et al. explicitly recite sending sales data to a server. Delurgio et al. teach sending product sales data to a server in order to receive optimized prices for said products or a subset of said products (abstract; figures 2, 11 and 12; column 7, lines 14-60). Ouimet et al. does not specifically recite demand models based on Bayesian statistics. On the other hand, Ouimet et al. teach that an advantage of their system is that any demand model can be used (column 1, lines 59-62). Delurgio et al. also teach demand models derived using Bayesian statistics (column 8, lines 10-25). Therefore, it would have been obvious to one of ordinary skill to combine the teachings of Ouimet et al., Hartman et al., and Delurgio et al. in order to provide a grocery chain (e.g. Giant, Safeway) a method for managing prices at multiple stores ('352, column 7, lines 14-43) and better optimize prices by grouping products according to price sensitivity ('425, column/line 2/55-3/26)." Applicants respectfully traverse the rejection.

Base Claims 14, 21, 22, 23 and 24 have been amended to recite in relevant part:

"subset of the plurality of products which is less than the plurality of products, the subset being designated by solving an integer problem, wherein the optimization includes relaxation of constraints, and wherein the designation of the subset of products includes allowing a number N to be designated and selecting no more than N products of the plurality of products to form the subset of products, and wherein the selected no more than N products has the largest impact on optimization of prices of any subset of no more than N products of the plurality of products" (Emphasis added).

Support for the amendment to Base Claims 14, 21, 22, 23 and 24 may be found on page 134, lines 10-19 of the application as filed, which states: "**The subset optimization may choose the**

products that comprise this subset in a way that has the largest impact on the client's objective function. If, for example, the client's objective is to maximize profit, it is desirable to **populate the subset of products** whose prices are allowed to change **with those products that are most likely to have the largest impact on profit**. In one way of doing this … to obtain a new set of optimized prices." (Emphasis added). Hence, Base Claims 14, 21, 22, 23 and 24 are allowable over the cited art for at least the same reasons.

Applicants respectfully submit that none of the cited references Ouimet et al. (US 6,094,641) in view of Hartman et al. (US 5,987,425) and Delurgio et al. (US 6,553,352), disclose or suggest the present invention, alone or in combination, as recited in base Claims 14, 21, 22, 23 and 24, for the following reasons.

Applicants' base Claims 14, 21, 22, 23 and 24 all recite **designating a subset of products** for optimization as a novel combination of at least five distinct steps as summarized below:

1. designated by **solving an integer problem,**
2. **designation of a number N**
3. **selecting no more than N products** to form the subset of products
4. the selected N products **has the largest impact on optimization of prices of any subset** of products

In contrast, Hartman '425 appears to teach away from the present invention by describing a method for determining pricing margins based on "customers' sensitivity to retail prices" (column 2, lines 64-66). As previously contended by the Applicants, Hartman '425 appears to require the users to manually assign products to pools by what they "**feel** as to the **degree of the consumers' sensitivity** to retail prices" (emphasis added). (see column 2, lines 60-63, Abstract, Summary & Claim 1 and Figures 1-3):

1) Pool products be customer price sensitivity
   a. "experts" manually **assign pools by instinct**
   b. **pool for what is felt is level of customer sensitivity to price**

 2) <u>**Assigning variable margins**</u> to products

 3) Generating variable prices

The intention of the Applicants' argument is not to suggest that an automated system is novel over a manual operation, but rather that the present invention of "selecting **no more than N products** of the plurality of products **to form the subset of products**, and wherein the selected no more than N products **has the largest impact on optimization of prices of any subset** of no more than N products of the plurality of products" as recited in Claims 14, 21, 22, 23, 24 is fundamentally distinct from the ambiguous <u>**"feel" is "customers' sensitivity"**</u> of Hartman. (Emphasis added).

Pooling, as disclosed in Hartman, is performed in an ambiguous manner for a purpose (customer sensitivity) that is very different than the purpose (largest impact on optimization) disclosed in the present invention. Moreover, in Hartman, the actual price generation disclosed is necessarily for all products, as explicitly discussed in Hartman: "A variable margin pricing system concentrates on this 80% of the inventory by smoothly neutralizing the customers increasing sensitivity to increasing levels of retail prices and then in the remaining 20% forces the users of the system to recognize that their major competitors (discounters) have permanently imprinted into customers' consciousness cer-tain SKUs that must be retailed at lower margins." (Showing processing for 100% of inventory) (Column 3, lines 13-20). In contrast, the present invention <u>**optimizes for only the subset**</u>. Hence Claims 14, 21-24 are allowable over the cited art for at least the same reasons.

Furthermore, Hartman discloses the need for highly trained experienced **"experts" to perform the pooling by "feel"**. (Emphasis added). Hartman, due to its ambiguous methodology and reliance on experts, does not appear to provide predictability of results. In contrast, the present invention has **no expertise requirements**. The present invention is intended to allow the relatively unsophisticated store manager, or comparably unsophisticated individual, to perform powerful and sophisticated subset selections. Moreover, the present invention by "selected no more than N products **has the largest impact on optimization of prices of any subset** of no more than N products of the plurality of products", as recited in Claims 14, 21-24, is **highly predictable** and

produces **consistent, repeatable results**. (Emphasis added). Contrary, every "expert" of **Hartman may provide different, unpredictable subsets,** even when under similar conditions. This is due to the lack of a clear and distinguished methodology beyond 'expert feel' for the pooling of Hartman. As such, Applicants respectfully submit that Hartman does not teach or suggest the "designating a subset of products" as disclosed in Claims 14, 21-24. Hartman appears to generate variable margins for products from unpredictable pools of products and requiring an expert, which is very different from the present invention's predictable subset designation for optimization. Hence Claims 14, 21-24 are allowable over the cited art for at least the same reasons.

Ouimet '641 appears to disclose a "**tuning process** [for modifying] the original demand model . . . **to incorporate the psychological effects**." (Emphasis added). (see column 5, lines 12-18, Abstract, Summary & Claim 1 and Figures 1-5):

1) Selecting a demand model
2) **Tuning** the demand model
    a. **Decomposing Prices**
    b. Determining **weighted function**
    c. **Composing perceived prices**
3) Optimizing prices utilizing the tuned demand model

See the arguments made above at Claim 1 regarding Ouimet. As stated earlier, Ouimet revolves around incorporating perceptions into the demand model. It appears that in Ouimet all products are decomposed and analyzed to **compose perceived prices**. As such, the method disclosed in Ouimet '641 appears to not function as a method of "computing a preferred set of prices for a subset of a plurality of products . . . [where] no more than N products of the plurality of products [form] the subset and wherein the selected . . . products has the largest impact on optimization of prices of any subset . . . of products" as recited in Claims 14, 21-24. Hence Claims 14, 21-24 are allowable over the cited art for at least the same reasons.

As for Delurgio '352, Delurgio discloses optimization of products in general terms. In fact, the claim of Delurgio is an "**interface**" for product pricing optimization. (Emphasis added). (see column 7, lines 14-42, Abstract, Summary & Claim 1 and Figures 1-31). Delurgio '352 revolves around a user interface for price optimization. In contrast, the present invention designates subsets of products for optimization. Delurgio '352 does not appear to teach or suggest generating subsets. Hence Claims 14, 21-24 are allowable over the cited art for at least the same reasons.

Thus, in sum, Claims 14, 21-24 are allowable over the cited art for at least the same reasons.

Regarding Claim 20, Examiner has stated that "it is inherent to the solution of an IP problem to 'relax' the integer constraint in order to convert the IP problem to a more solvable LP or linear programming problem." Applicants respectfully traverse the rejection.

Claim 20 has been amended to recite "providing rule relaxation wherein the rule relaxation comprises: prioritizing a plurality of rules; and relaxing at least one lower priority rule to allow a higher priority rule to become feasible."

Support for the amendment may be found at page 128, line 5 to page 129, line 3 of the specification as filed, which states "The rules are prioritized . . . check is made to see if a rule is infeasible . . . rule may be relaxed to allow . . . process is continued until all rules are feasible." Hence, Claim 20 is allowable over the cited art for at least the same reasons.

See arguments at Claim 7 above. Similarly to the argument presented for Claim 7, Applicants respectfully submit that neither Ouimet '641, Hartman '425 or Delurgio '352 teach or suggest "providing rule relaxation wherein the rule relaxation comprises: prioritizing a plurality of rules; and relaxing at least one lower priority rule to allow a higher priority rule to become feasible." in the manner of Claim 20. Ouimet '641 and Hartman '425 do not appear to provide "rules" or the ability to relax such rules. Hence, Claim 20 is allowable over the cited art for at least the same reasons.

New dependent Claim 28 has been added which states "The apparatus, as recited in claim 1, wherein the largest impact on optimization of prices maximizes an objective factor, wherein the objective factor includes at least one of maximizing profits, and maximizing sales of a product of the plurality of products."

Support for the addition may be found on page 14, lines 12-14 of the specification as filed, which states "The rules normally include an optimization, such as optimizing profit or optimizing volume of sales of a product and constraints such as a limit in the variation of prices."

It is believed none of the cited art Ouimet '641, Hartman '425 and Delurgio '352 discloses having a largest impact on optimization of prices by maximizing an objective factor in the manner of Claim 28. Hence, New Claim 28 is allowable over the cited art for at least the same reasons.

Furthermore, with regard to all pending Claims 1, 3-7, 9-14, 16-28, Applicants reiterate their belief that Hartman '425 is not combinable as a matter of art with Ouimet '641. The Examiner has stated that "each of the prior art references are directed to price optimization ('352, abstract, '425, abstract; '641, abstract) and the Examiner contends that it would have been obvious to one of ordinary skill to allow users of the Ouimet et al. system to … better optimize prices by grouping products according to price sensitivity ('425, column/line 2/55-3/26)." With all respect to the Examiner, Applicants do not contend that these goals, when viewed in the abstract, may not be useful together; but rather that the methodology of **Hartman is simply incompatible with Ouimet**.

The method disclosed in Ouimet appears to be a system for further tuning a demand model by taking into account "psychological effects". (column 3, lines 1-3). The "modified demand model from the Tuning Process [is utilized] to determine **the** price for each item that will **maximize profits**." (Column 5, lines 45-50) (Emphasis added). As such, Ouimet appears to necessitate computing **specific, singular output values: the price for each item that maximizes profits**.

In contrast, Hartman teaches away from Ouimet by disclosing a method for developing "**variable margin pricing** of products" rather than a specific value (column 1, lines 6-10). In Hartman a "**radically different approach** has been taken . . . where the basic philosophy is that **retail prices only need to be close to a <u>vague undefined target.</u>**" (Column 2, lines 56-60)

(Emphasis added). Hartman **self proclaims its "radical[]" distinctiveness** in no uncertain terms. (Emphasis added).

As such, Hartman's **methodology appears to be at complete odds to the method of Ouimet.** With such a fundamental difference of methodology, it is clear that the methods disclosed by Hartman, and that of Ouimet, are incompatible methods and thus at the least their combinability is non-obvious.

In sum, base claims 1, 14, 21, 22, 23 and 24 have been amended and are now believed to be allowable. Dependent claims 3, 7, 16, 20, 26 and 27 have been amended and are now believed to be allowable. Dependent claims 3-7, 9-13, 16-20, 26 to 28 which depend therefrom are also believed to be allowable as being dependent from their respective patentable parent claims 1 and 14 for at least the same reasons. New claim 28 has been added and is also believed to be allowable. Claim 8 has been canceled without prejudice or disclaimer of the subject matter therein.

Applicants believe that all pending claims 1, 3-7, 9-14, 16-28 are now allowable over the cited art and are also in allowable form and respectfully request a Notice of Allowance for this application from the Examiner. Applicants hereby petition for a one-month extension of time within which to respond to the referenced Office Action. The commissioner has been authorized via EFS (credit card) to charge the RCE fee and the one-month extension of time fee. The commissioner is authorized to charge any additional fees that may be due to our Deposit Account No. 50-2766 (Order No. DEM1P008). Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at telephone number 925-570-8198.

LAW OFFICES OF KANG S. LIM   Respectfully submitted,
PMB 436
3494 Camino Tassajara Road   /Kang S. Lim/
Danville, CA 94506
Voice: (925) 570 8198
Facsimile: (925) 736 3974   Kang S. Lim
                                              Attorney for Applicant(s)
                                              Reg. No. 37,491

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